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ABSTRACT

To investigate the impact which continuity in children's programs might have for children's longterm cognitive and noncognitive development, effects of a prekindergarten (PreK) program on children's performance was measured using two cognitive measures at the end of the subjects' first grade year. Staff development activities in selected districts focused on ways to increase the continuity of children's learning experiences. Children in those districts were compared with children in districts with less continuity. Statistical controls were used for age, level of mother's education, family income, and cognitive performance at the beginning of PreK. On the Cognitive Abilities Test and on the Peabody Picture Vocabulary Test, the children in high-continuity districts surpassed children in districts with less continuity in both general reasoning and knowledge of verbal concepts. These findings provide evidence of the effectiveness of activities to strengthen continuity in children's educational experiences when those activities follow a developmental PreK program. (Author/MP)

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CONTINUITY OF LEARNING EXPERIENCES:

A KEY TO LONG-RANGE EFFECTS OF PREKINDERGARTEN

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CONTINUITY OF LEARNING EXPERIENCES:

A KEY TO LONG-RANGE EFFECTS OF PREKINDERGARTEN

A developmental prekindergarten has a favorable effect on the cognitive performance of first-grade children when there has been continuity in the learning experiences of the children in prekindergarten, kindergarten, and first grade. This conclusion is based on a study of the performance of children who had attended the New York State Experimental Prekindergarten (PreK) Program two years earlier.

Results obtained without considering continuity of learning experiences showed minimal long-range effects of the PreK program. This might be explained in part by differences between the PreK program and the programs the children experienced in kindergarten and grade one. However, when performance of children who had substantial continuity was compared with performance of children with less continuity, the children with greater continuity scored higher. The difference was statistically significant.

Promoting Continuity

A concern which educators have expressed about preschool education programs is whether positive effects of the programs, regularly reported in research studies, are maintained over a longer period of time (Bronfenbrenner, 1974; Wolff and Stein, 1966; and Westinghouse Learning Corporation, 1969). Accompanying this concern is the need to determine the conditions under which preschool programs are most likely to have positive long-range effects. The original plan for evaluating the Experimental Prekindergarten Program incorporated these concerns in one of the six questions posed for the evaluation:

> Can program components or variations be identified which contribute to greater success of particular programs in producing lasting increases in the level of cognitive and other development? (State Education Department, January 21, 1975)

To answer this question, the implementation of the evaluation plan was designed to investigate the impact which continuity in the children's programs might have in producing lasting effects on the children's cognitive and noncognitive development. This strategy is consistent with the concern of others in the field of early childhood education. Zigler (1978, p.5), for example, in reviewing the impact of Head Start, describes two kinds of continuity which are important for producing long-term effects: (1) continuity between the preschool program and the child's home; and (2) continuity between the preschool program, kindergarten, and the elementary grades. The validity of the first of these was demonstrated in an earlier study done by this office on effects of parent involvement on children's performance (State Education Department, August 31, 1979). To assess the validity of the second was the purpose of the investigation described here.

Another investigator summarizes the need in this way: "We must . . . align the goals of programs for infants, preschoolers, and early elementary school-aged pupils so that such programs become components of an integrated, consistent plan for educating young children" (Weinberg, 1979, p. 915).

To investigate the relation of continuity to performance of the children, seven districts were identified for study in depth. These districts had exhibited commitment to developing program continuity or were judged to have the greatest potential for developing it. An attempt was made to increase the degree of continuity in these districts as well as to identify its effects on long-term learning.

Three children were selected in each district for intensive study. For each child, a team was formed consisting of the child's past, present, and future teachers as well as nonteaching staff members and the building principal. The team worked together as the child moved from PreK into kindergarten and then into the first grade. The team focused on developing their skills in observing children; recording their observations; collecting meaningful data from interviews, parent conferences, school records, and samples of children's work; reviewing data; and using data for planning instruction.

It was found that after participating in staff development teachers were better able to: (1) capitalize on children's strengths and interests; (2) provide varied experiences to meet individual children's needs; (3) make appropriate materials accessible to children; (4) relate present and past learning; (5) integrate current learning experiences; (6) communicate with parents and involve them in the education of their children; and (7) make effective use of colleagues and specialists.

The processes and the team structure were based on the premise that by studying a small group of children, the teachers and the teams could increase the degree of continuity for all the children they serve. It was to test the validity of this premise that the present study was designed.

Results Without Considering Continuity

Two aspects of cognitive performance were studied. General reasoning was measured by the Cognitive Abilities Test (Thorndike, Hagen, and Lorge, 1968). The specific areas of cognitive development measured by the test include the ability to name objects and actions; to identify size, position, and quantity; to see relationships and to classify objects; and to deal with quantitative concepts and relationships. The second aspect of cognitive performance studied was knowledge of verbal concepts as measured by the Peabody Picture Vocabulary Test (Dunn, 1965).

Effects of the prekindergarten program on children's performance on the two cognitive measures at the end of first grade were first examined without considering the degree of continuity of different children. A sample of 1,078 former prekindergarten children was compared with a control group containing 39 children who had not attended PreK. Because there were some differences between the former PreK children and the control children on factors which could affect their test performance, statistical adjustments were made for (1) each child's age; (2) the level of education of the child's mother; (3) the income of the child's family; and (4) the child's performance on three pretests administered at the beginning of PreK. The three pretests included general reasoning, measured by the Walker Readiness Test (Walker, 1969); school-related knowledge and skills, measured by the Cooperative Preschool Inventory (Educational Testing Service, 1970); and knowledge of verbal concepts, measured by the Peabody Picture Vocabulary Test. Adjusting for these factors had the effect of comparing former PreK children with those control children who were similar to them on the four factors. Possible effects of parent involvement and of time spent in the program were also investigated.

To assess the effect of PreK on the general reasoning of children at the end of the first grade, the Cognitive Abilities Test (CAT) scores of the former PreK children and the control-group children were compared. No statistically significant differences were found between the two groups.

In knowledge of verbal concepts, as measured by the Peabody, the former PreK children who had a combination of low Walker pretest scores and high Cooperative pretest scores were found to exceed the control group; at other levels of the pretests, the control group equalled or surpassed the former PreK children. For former PreK children, those whose parents spent more time involved in the program tended to score somewhat higher on the Peabody.

Loss of children from the control group since it was formed two years earlier resulted in a relatively small control group. The small size of the control group and the discrepancy in size between the control group and the group of former PreK children may affect the results of the analysis. Subtle effects of the PreK program are not likely to be found, thus giving greater credence to those effects that are found. However, the disadvantage is that some real but subtle effects of the program may not be discovered.

Effects of Continuity

There was considerable variation in how the former PreK children performed on each test at the end of grade one. Some appeared to have made substantial progress, while others had not. It was hypothesized that some of this variation was due to the continuity, or lack of continuity, in the children's learning experiences. It was to explore this possibility that the next phase of the analysis was undertaken.

Four groups were studied. Three were made up of former PreK children. The fourth was the control group. The groups were:

1. Intensive Study group, made up of former PreK children who were the subjects of an intensive process of study and documentation designed to increase continuity. These children were in the seven districts designated as indepth study districts in the prekindergarten evaluation study. This group was composed of 20 children.

2. Indepth group, made up of the other former PreK children in the indepth districts who were not studied as intensively as the children in the first group. However, because they went to the same schools and were taught by the same teachers as the intensive study group, it was anticipated that the processes used with the study group would increase continuity for them as well. This group contained 344 children.

3. Non-indepth group, made up of 807 former PreK children in districts not involved in the indepth study.

4. Control group, made up of 40 children in districts not involved in the indepth study and who had not participated in PreK.

Two comparisons between these groups were viewed as critical. First, if the activities to promote continuity are to have a broad effect, they must generalize to other children beyond the intensive study group. Therefore, a finding of no difference between the intensive study group and the indepth group would be viewed as desirable, provided a difference is found between the indepth group and the non-indepth group.

Second, the difference between the indepth group and the non-indepth group appears to offer the best indication of effects of continuity, since both groups attended PreK but only the indepth group was in districts where intensive efforts were made to improve continuity.

Because of the relatively small sizes of the intensive study group and the control group, statistical analyses involving them are less sensitive than analyses involving the other two groups.

The four groups were compared on the CAT administered at the end of grade one. Statistical adjustments were made to compensate for differences between the groups in (1) mother's education; (2) family income; and (3) scores on each of the three tests administered near the beginning of PreK.

Results are shown in Figure 1. The intensive study group had an average percentile score of 60, indicating that children in that group on the average surpassed 60 percent of the children included in the analysis. Percentile scores for the remaining groups were: indepth group, 54; non-indepth group, 45; and control group, 45.

As anticipated, the difference between the intensive study group and the indepth group is not statistically significant. The difference between the in-depth group and the non-indepth group is highly significant. The difference between the indepth group and the control group, while approximately the same size, is not statistically significant. This is probably due in part to the relatively small size of the control group.

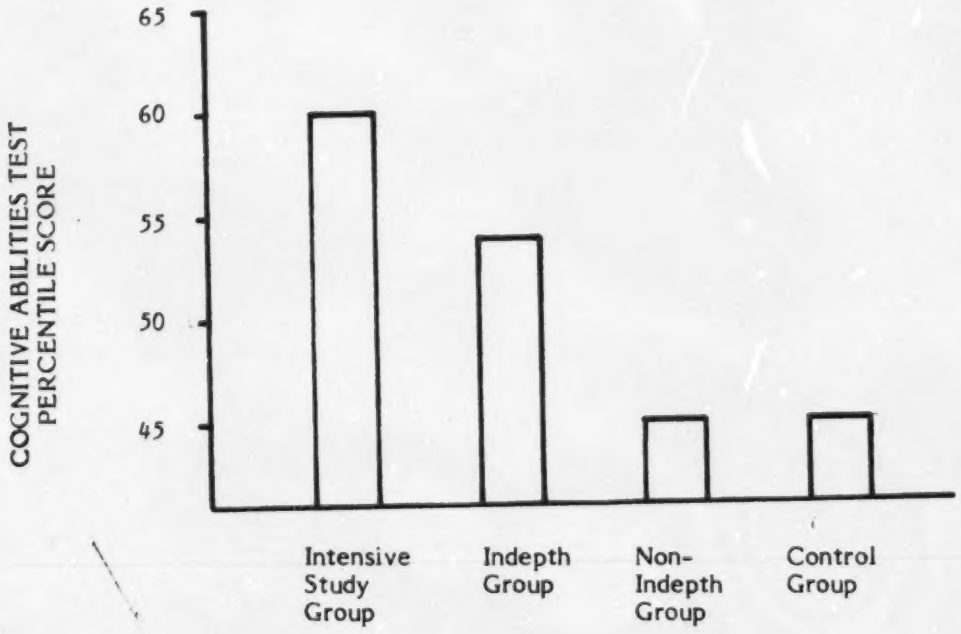

Figure 1. Percentile Scores on the Cognitive Abilities Test for Groups of Children Receiving Different Combinations of Prekindergarten Experience and Program Continuity

How important is the difference between the indepth group and the non-indepth group? These results show that children who are in a school which has emphasized program continuity surpass 9 percent more children on the CAT than they would have if they had been in a school which placed less emphasis on program continuity. This indicates that these children are in a favorable position as compared to children with less continuity in their ability to master problems in school which require general reasoning.

Technical data provided in the CAT test manual provide additional evidence of the importance of CAT scores. The CAT is positively correlated with children's scores on tests of reading and other basic skills. The higher children score on the CAT, the higher they tend to score on tests of basic skills. The CAT is also positively correlated with children's grades in the second and third grades. The higher children score on the CAT, the higher their grades tend to be (Thorndike, Hager., and Lorge, 1974, pages 28-32).

When CAT scores of children are compared with their performance on achievement tests, children scoring at a given level on the CAT are likely to have about 20-25 percent fewer members of their group falling below grade level in reading and other basic skills than children scoring nine percentile points lower on the CAT.

These results provide evidence of the effectiveness of the process used to increase continuity in the learning experiences of children between PreK and the end of grade one. Those children who were studied intensively as well as those taught by the same teachers seem to have benefited in terms of their performance on a test of general reasoning, the CAT.

When the same groups were compared on the Peabody, similar results were obtained, as shown in Figure 2. Percentile scores for the four groups were: intensive study group, 60; indepth group, 63; non-indepth group, 53; and control group, 51.

The difference between the intensive study group and the indepth group is not statistically significant. However, the difference between the indepth group and the non-indepth group is highly significant. The difference between the indepth group and the control group, while approximately the same size, is not statistically significant, due in part to the small size of the control group.

What do these results mean in terms of how children are likely to perform in school? The evidence indicates that a child in a school which has developed a high degree of continuity surpasses 10 percent more children on the Peabody than a child who attended a school which provides less program continuity. On tasks requiring knowledge of verbal concepts, the child experiencing more continuity would have an advantage.

Technical data in the Peabody test manual indicates that the Peabody is positively correlated with achievement test scores and with grades. The higher children score on the Peabody, the higher their achievement test scores and their grades are likely to be (Dunn, 1965, pages 32-42).

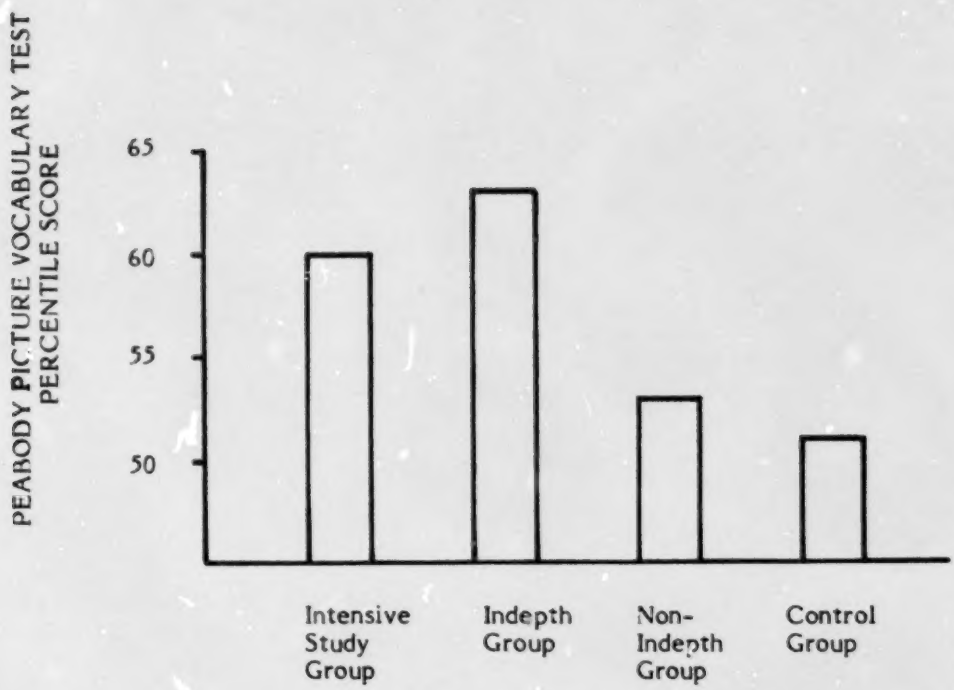

Figure 2. Percentile Scores on the Peabody Picture Vocabulary Test for Groups of Children Receiving Different Combinations of Prekindergarten Experience and Program Continuity

Summary and Conclusions

On two different cognitive measures, children who had experienced greater continuity in their educational programs between PreK and the end of grade one exceeded children who had experienced less continuity. These findings provide evidence of the effectiveness of activities to strengthen continuity in children's educational experiences when those activities follow a developmental PreK program.

It should be pointed out that the results do not say anything about the effects of program continuity on children who had not attended PreK. To draw such conclusions, it would have been necessary to study a group which experienced continuity, as the intensive study group and the indepth group did, but which had not attended PreK. Data on children meeting these requirements were not available. However, it seems a reasonable hypothesis that the continuity process is likely to have positive effects on all children.

Since a large majority of the children enrolled in the Experimental Prekindergarten Program are from low socioeconomic backgrounds, the results of this study do not provide direct evidence of the effects of continuity on children from the general population.

These findings do not provide direct information on the effects of program continuity on children who attended different kinds of PreK programs. The effects were found for continuity in conjunction with a developmental PreK program.

Future studies, not proposed in the original prekindergarten evaluation plan (State Education Department, January 21, 1975), could be conducted to answer questions about effects of program continuity in the situations mentioned above.

In spite of these limitations, the results of the present study seem unambiguous: If children who have had PreK move into a school which does not closely relate the program of its kindergarten and primary grades to what the children have already experienced, the prospect of maintaining the effects of PreK is unpromising. However, if there is a concerted effort to build on the PreK experience as the children progress through kindergarten and first grade, the positive effects of PreK can be maintained.

Zigler put it succintly: "We can never inoculate children in one year against the ravages of deprivation; there must be continuity" (Zigler, 1978, p. 5).

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